CHARACTERIZATION OF *SEC*-BUTOXYTRIMETHYLSILANE BY CHIRPED-PULSE FOURIER TRANSFORM MICROWAVE SPECTROSCOPY

FREYA E. L. BERGGÖTZ, HIMANSHI SINGH, MELANIE SCHNELL, *FS-SMP, Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany*.

Silicon chemistry is an extensive research topic due to its importance for industry and technology, and because of its natural abundance on earth. Silicon is a versatile element, its applications range from pure silicon to compounds. To understand the physical and chemical properties of silicon-containing molecules it is essential to characterize the gas-phase structures.

The rotational spectrum and structural analysis of *sec*-butoxytrimethylsilane (sBT-Si) will be presented. The spectrum of sBT-Si has been recorded using the Hamburg COMPACT spectrometer, which is a chirped-pulse Fourier transform microwave spectrometer, in the 2 – 8 GHz frequency range. Quantum-chemical calculations have been carried out to study the conformational flexibility of sBT-Si, and the measured rotational spectrum was examined for the lowest energy conformers. The spectrum is complicated due to the fact that three of the five methyl groups in sBT-Si have a rotational barrier lower than 7 kJ/mol, leading to internal rotation splitting. Despite this, the lowest energy conformer is prominent in the spectrum and has been successfully assigned. Weak signals of the conformer second lowest in energy have also been assigned. In this talk, the conformational flexibility and internal motion of this molecule will be discussed and compared to related molecules.